Settlements and Billing

Configuration Guide: Day Ahead Congestion Pre-calculation

DA\_CONG\_PC

Version 5.0

Table of Contents

1. Purpose of Document 3

2. Introduction 3

2.1 Background 3

2.2 Description 3

3. Charge Code Requirements 3

3.1 Business Rules 3

3.2 Predecessor Charge Codes 4

3.3 Successor Charge Codes 5

3.4 Inputs – External Systems 5

3.5 Inputs - Predecessor Charge Codes or Pre-calculations 6

3.6 CAISO Formula 6

3.7 Outputs 8

4. Charge Code Effective Date 9

# Purpose of Document

The purpose of this document is to capture the requirements and design specification for a Charge Code in one document.

# Introduction

## Background

Locational Marginal Prices will be used in principle to settle Energy transactions. Price Locations and Aggregated Price Locations are defined on collections of network nodes. A LMP will be calculated for each Price Location and each Aggregated Price Location.

Imbalance Reserves have corresponding locational prices called Imbalance Reserve Up Marginal Price, or Imbalance Reserve Down Marginal Price.

Marginal congestion component of LMP or marginal congestion component of both Imbalance Reserve Up and Down will be used to price the congestion revenue contribution for Day-Ahead Energy, and for Imbalance Reserves Up and Down awards respectively.

## Description

This Charge Code computes BAA level precalculation with respect to congestion. The BAA level net congestion contribution from Imbalance Reserve Up and Down awards will be computed, and for the case of CISO BAA such value to CRR Balancing Account (CC 6790) while for EDAM BAAs (excluding CISO) such value will go to the Day Ahead Congestion Offset.

The EDAM BAA net congestion contribution after factoring any congestion credits for transmission contracts congestion hedge will be added to the Day Ahead Congestion Offset for each EDAM BAA.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
|  | This document provides pre-calculations needed by successor charge codes. These calculations are for congestion contribution values in Day-Ahead, including Energy, virtual bidding, and IRU or IRD. |
|  | Per BAA, IRU/IRD congestion revenue is the net of (a) sum product of nodal awards and MCC breakdown price, and (b) non-negative difference of requirement congestion amount and surplus congestion adjustment. |
|  | Per BAA, IRU/IRD requirement congestion amount is the product of IRU/IRD requirement and the IRU/IRD BAA Requirement MCC. |
|  | Per BAA, IRU/IRD surplus adjustment is the sum product of IRU/IRD surplus and the IRU/IRD surplus marginal MCC over all Surplus zones. |
|  | For CISO BAA, for every Trading Hour, the IFM Congestion Charge is the revenues from congestion charges attributable to the Day Ahead market for both Energy and Ancillary Services Imports less the reversals of congestion charges to ETC, TOR, and Converted Rights Holders. The IFM Congestion Charge also includes the congestion revenues from DA Virtual Awards assessed at the Day-Ahead MCC prices. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement |
| CC 6013 - Convergence Bidding Day Ahead Energy, Congestion, Loss Settlement |
| CC 6710 - Day Ahead Congestion - AS Spinning Reserve Import Settlement |
| CC 6720 - Day Ahead Congestion - AS Non-Spinning Reserve Import Settlement |
| CC 6750 - Day Ahead Congestion - AS Regulation Up Import Settlement |
| CC 6760 - Day Ahead Congestion - AS Regulation Down Import Settlement |
| CC 8071 – Day Ahead Imbalance Reserve Up Settlement |
| CC 8081 – Day Ahead Imbalance Reserve Down Settlement |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 6790 –CRR Balancing Account |
| CC 8704 – Day Ahead Congestion Offset |

## Inputs – External Systems

|  |  |  |
| --- | --- | --- |
| Row # | Variable Name | Description |
|  | BAHourlyResIRUSchedQty BrtuT'I'Q'AA’QpM'F'S'L'mdh | The Hourly IFM Imbalance Reserve Up Schedule Quantity for each Resource for every hour for each trading day. |
|  | IRUMCCPrc Q’AAQpmdh | Marginal congestion component of Imbalance Reserve Up (IRU) per BAA |
|  | BAHourlyResIRDSchedQty BrtuT'I'Q'AA’QpM'F'S'L'mdh | The Hourly IFM Imbalance Reserve Down Schedule Quantity for each Resource for every hour for each trading day. (MW) |
|  | IRDMCCPrc Q’AAQpmdh | Marginal congestion component of Imbalance Reserve Down (IRD) per BAA |
|  | BAAHourlyIRUReqQty Q'AA’Qpmdh | The Hourly IRU requirement quantity for each BAA and APnode. (MW) |
|  | BAAHourlyIRDReqQty Q'AA’Qpmdh | The Hourly IRD requirement quantity for each BAA and APnode. (MW) |
|  | IRUReqtMCCPrc Q’AAQpmdh | Marginal congestion component of Imbalance Reserve Up (IRU) Requirement per BAA |
|  | IRDReqtMCCPrc Q’AAQpmdh | Marginal congestion component of Imbalance Reserve Down (IRD) Requirement per BAA |
|  | BAAHourlyIRUSurplusQty Q'AA’Qpmdh | The Hourly IRU surplus quantity for each BAA. (MW) |
|  | BAAHourlyIRDSurplusQty Q'AA’Qpmdh | The Hourly IRD surplus quantity for each BAA. (MW) |
|  | IRUSurplusMCCPrc Q’AAQpmdh | Marginal congestion component of Imbalance Reserve Up (IRU) Requirement per BAA |
|  | IRDSurplusMCCPrc Q’AAQpmdh | Marginal congestion component of Imbalance Reserve Down (IRD) Requirement per BAA |

## Inputs - Predecessor Charge Codes or Pre-calculations

| Row # | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
|  | BAANetHourlyDAEnergyCongestionNetOfCreditsAmount Q’mdh | CC 6011 – Day Ahead Energy, Congestion, Loss Settlement |
|  | CAISOHourlyTotalDACongestionSpinAmount mdh | CC 6710 - Day Ahead Congestion - AS Spinning Reserve Import Settlement |
|  | CAISOHourlyTotalDACongestionNonSpinAmount mdh | CC 6720 - Day Ahead Congestion - AS Non-Spinning Reserve Import Settlement |
|  | CAISOHourlyTotalDACongestionRegUpAmount mdh | CC 6750 - Day Ahead Congestion - AS Regulation Up Import Settlement |
|  | CAISOHourlyTotalDACongestionRegDownAmount mdh | CC 6760 - Day Ahead Congestion - AS Regulation Down Import Settlement |
|  | BAATotalHourlyDAVirtualAwardCongAmount Q’mdh | CC 6013 - Convergence Bidding Day Ahead Energy, Congestion, Loss Settlement |

## CAISO Formula

BAHourlyResIRUCongestionAmount BrtQ’mdh=

Sum over (u,T’,I’, A, A’, Q, p, M’, F’, S’, L’)

{(-1)\* BAHourlyResIRUSchedQty BrtuT'I'Q'AA’QpM'F'S'L'mdh \* IRUMCCPrc Q’AAQpmdh }

BAATotalHourlyIRUCongestionAmount Q’mdh=

Sum over (B,r,t) { BAHourlyResIRUCongestionAmount BrtQ’mdh }

BAAHourlyIRUReqtCongestionAmount Q’mdh=

Sum over (A,A’,Q,p) { BAAHourlyIRUReqQty Q'AA’Qpmdh \* IRUReqtMCCPrc Q’AAQpmdh }

BAAHourlyIRUSurplusCongestionAdjustmentAmount Q’mdh=

Sum over (A,A’,Q,p) { BAAHourlyIRUSurplusQty Q'AA’Qpmdh \* IRUSurplusMCCPrc Q’AAQpmdh }

BAAHourlyIRUCongestionRevenueAmount Q’mdh=

{ BAATotalHourlyIRUCongestionAmount Q’mdh – Max(0,BAAHourlyIRUReqtCongestionAmount Q’mdh- BAAHourlyIRUSurplusCongestionAdjustmentAmount Q’mdh )}

BAHourlyResIRDCongestionAmount BrtQ’mdh=

Sum over (u,T’,I’, A, A’, Q, p, M’, F’, S’, L’)

{(-1)\* BAHourlyResIRDSchedQty BrtuT'I'Q'AA’QpM'F'S'L'mdh \* IRDMCCPrc Q’AAQpmdh }

BAATotalHourlyIRDCongestionAmount Q’mdh=

Sum over (B,r,t) { BAHourlyResIRDCongestionAmount BrtQ’mdh }

BAAHourlyIRDReqtCongestionAmount Q’mdh=

Sum over (A,A’,Q,p) { BAAHourlyIRDReqQty Q'AA’Qpmdh \* IRDReqtMCCPrc Q’AAQpmdh }

BAAHourlyIRDSurplusCongestionAdjustmentAmount Q’mdh=

Sum over (A,A’,Q,p) { BAAHourlyIRDSurplusQty Q'AA’Qpmdh \* IRDSurplusMCCPrc Q’AAQpmdh }

BAAHourlyIRDCongestionRevenueAmount Q’mdh=

{ BAATotalHourlyIRDCongestionAmount Q’mdh – Max(0,BAAHourlyIRDReqtCongestionAmount Q’mdh- BAAHourlyIRDSurplusCongestionAdjustmentAmount Q’mdh)}

BAAInterimTotalHourlyCongestionAmount Q’mdh=

(BAANetHourlyDAEnergyCongestionNetOfCreditsAmount Q’mdh +

BAAHourlyIRUCongestionRevenueAmount Q’mdh +

BAAHourlyIRDCongestionRevenueAmount Q’mdh + BAATotalHourlyDAVirtualAwardCongAmount Q’mdh )

EDAMBAATotalHourlyCongestionAmount Q’mdh=

BAAInterimTotalHourlyCongestionAmount Q’mdh where Balancing\_Authority\_Area (Q’) <> ‘CISO’

CISOBAATotalHourlyPart1CongestionAmount mdh=

Sum over (Q’) { BAAInterimTotalHourlyCongestionAmount Q’mdh }

where Balancing\_Authority\_Area (Q’) = ‘CISO’

CISOBAATotalHourlyPart2CongestionAmount mdh=

{ CAISOHourlyTotalDACongestionSpinAmount mdh + CAISOHourlyTotalDACongestionNonSpinAmount mdh +

CAISOHourlyTotalDACongestionRegUpAmount mdh +

CAISOHourlyTotalDACongestionRegDownAmount mdh }

CAISOHourlyIFMCongestionCharge mdh =

CISOBAATotalHourlyPart1CongestionAmount mdh + CISOBAATotalHourlyPart2CongestionAmount mdh

CAISODailyIFMCongestionCharge md=

Sum over (h) { CAISOHourlyIFMCongestionCharge mdh }

## Outputs

| Output Req ID | Name | Description |
| --- | --- | --- |
|  | In addition to any outputs listed below, all inputs shall be included as outputs. | All inputs.  |
|  | BAHourlyResIRUCongestionAmount BrtQ’mdh | IRU Congestion amount for resource r |
|  | BAATotalHourlyIRUCongestionAmount Q’mdh | Hourly BAA Total IRU Congestion amount |
|  | BAAHourlyIRUReqtCongestionAmount Q’mdh | IRU requirement congestion amount per BAA. |
|  | BAAHourlyIRUSurplusCongestionAdjustmentAmount Q’mdh | IRU surplus congestion adjustment amount per BAA. |
|  | BAAHourlyIRUCongestionRevenueAmount Q’mdh | IRU congestion revenue per BAA. |
|  | BAHourlyResIRDCongestionAmount BrtQ’mdh | IRD Congestion amount for resource r |
|  | BAATotalHourlyIRDCongestionAmount Q’mdh | Hourly BAA Total IRD Congestion amount |
|  | BAAHourlyIRDReqtCongestionAmount Q’mdh | IRD requirement congestion amount per BAA. |
|  | BAAHourlyIRDSurplusCongestionAdjustmentAmount Q’mdh | IRD surplus congestion adjustment amount per BAA. |
|  | BAAHourlyIRDCongestionRevenueAmount Q’mdh | IRD congestion revenue per BAA. |
|  | BAAInterimTotalHourlyCongestionAmount Q’mdh | Interim congestion amount per BAA for DA energy, IRU, and IRD. Also includes congestion contribution from TSRs. |
|  | EDAMBAATotalHourlyCongestionAmount Q’mdh | Hourly BAA Total Congestion amount from DA Energy, TSR DA Energy, IRU, and IRD. |
|  | CISOBAATotalHourlyPart1CongestionAmount mdh | CISO BAA Congestion amount contribution from DA energy, virtual bidding, IRU and IRD. |
|  | CISOBAATotalHourlyPart2CongestionAmount mdh | CISO BAA Congestion amount contribution from AS Imports. |
|  | CAISODailyIFMCongestionCharge md | Total daily CISO BAA congestion charge or revenue from energy (net of congestion credits for eligible transmission contracts), A/S imports congestion, virtual bidding, and Imbalance Reserves Up and Down. |
|  | CAISOHourlyIFMCongestionCharge mdh | Total hourly CISO BAA congestion charge or revenue from energy (net of congestion credits for eligible transmission contracts), A/S imports congestion, virtual bidding, and Imbalance Reserves Up and Down. |

#

# Charge Code Effective Date

| Charge Code/Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| Day Ahead Congestion Pre-calculation | 5.0 | 5/01/26 | Open | Configuration Changes |